

WHAT IS CLAIMED IS:

1           1.     A printing system comprising:  
2                     a first ink reservoir;  
3                     a support;  
4                     a first fluid conduit fluidly coupled to the ink reservoir and including  
5 a first fluid coupler; and  
6                     a printhead assembly including:  
7                         a body releasably coupled to the support;  
8                         a plurality of printheads coupled to the body including a first  
9 printhead and a second printhead;  
10                     a fluid passage fluidly coupled to both the first printhead and  
11 the second printhead, the fluid passage including a second fluid coupler  
12 releasably coupled to the first fluid coupler.

1           2.     The system of Claim 1, wherein the plurality of printheads are  
2 releasably coupled to the body.

1           3.     The system of Claim 2, wherein the fluid passage includes a  
2 plurality of third fluid couplers and wherein the plurality of printheads includes a  
3 plurality of fourth fluid couplers releasably coupled to the third fluid couplers.

1           4.     The system of Claim 3, wherein at least one of the plurality of third  
2 fluid couplers and at least one of the plurality of fourth fluid couplers are keyed  
3 to one another.

1           5.     The system of Claim 1, wherein the first fluid coupler and the  
2 second fluid coupler are keyed to one another.

1           6.     The system of Claim 1 including:  
2                     a second ink reservoir; and  
3                     an umbilical including the first fluid conduit, wherein the umbilical  
4 further includes:

5                   a second fluid conduit fluidly coupled to the second ink  
6 reservoir and including a third fluid coupler.

1           7.     The system of Claim 6, wherein the third fluid coupler is configured  
2 to not fluidly couple to the second fluid coupler.

1           8.     The system of Claim 6, wherein the umbilical has a first interface  
2 stationarily coupled to the first fluid coupler and the third fluid coupler, wherein  
3 the printhead assembly includes a second interface stationarily coupled to the  
4 second fluid coupler and wherein the first interface and the second interface are  
5 keyed such that when the first interface is connected to the second interface,  
6 the first fluid coupler is aligned with the second fluid coupler.

1           9.     The system of Claim 8 including a controller, wherein the umbilical  
2 includes a first signal transmitting line connected to the controller and a first  
3 signal transmitting connector coupled to the signal transmitting line, wherein the  
4 printhead assembly includes:

5                   a printhead driver;  
6                   a second signal transmitting line connected to the driver; and  
7                   a second signal transmitting connector coupled to the second signal  
8 transmitting line, wherein the first connector is releasably connected to the  
9 second connector.

1           10.    The system of Claim 9, wherein the first interface of the umbilical  
2 and the second interface of the printhead assembly are keyed to align the first  
3 connector with the second connector during connection of the first interface to  
4 the second interface.

1           11.    The system of Claim 9 including a sheath containing the first fluid  
2 conduit and the second fluid conduit.

1           12.    The system of Claim 11, wherein the sheath further contains the at  
2 least one signal transmitting line.

1           13.   The system of Claim 12, wherein the at least one signal  
2   transmitting line is releasably coupled to the controller.

1           14.   The system of Claim 13, wherein the first fluid conduit and the  
2   second fluid conduit are releasably coupled to the first reservoir and the second  
3   reservoir, respectively.

1           15.   The system of Claim 9, wherein the at least one signal transmitting  
2   line is releasably coupled to the controller.

1           16.   The system of Claim 15, wherein the first fluid conduit and the  
2   second fluid conduit are releasably coupled to the first reservoir and the second  
3   reservoir, respectively.

1           17.   The system of Claim 1, wherein the plurality of printheads are  
2   staggered relative to one another.

1           18.   The system of Claim 1, wherein at least one of the first fluid  
2   coupler and the second fluid coupler is configured to block flow of fluid when in  
3   a disconnected state.

1           19.   A printer kit comprising:  
2               a printer including:  
3                   a first ink reservoir;  
4                   a second ink reservoir;  
5                   a support;  
6                   a first fluid conduit fluidly coupled to the first ink reservoir  
7   and including a first fluid coupler;  
8                   a second fluid conduit fluidly coupled to the second ink  
9   reservoir and including a second fluid coupler;  
10               a first printhead assembly including:  
11                   a first body configured to be releasably coupled to the  
12   support;

13                   a first plurality of printheads coupled to the first body  
14 including a first printhead and a second printhead;  
15                   a first fluid passage fluidly coupled to both the first printhead  
16 and the second printhead; and  
17                   a third fluid coupler fluidly coupled to the first fluid passage,  
18 wherein the third fluid coupler is configured to connect to the first fluid coupler;  
19 and  
20                   a second printhead assembly including:  
21                   a second body configured to be releasably coupled to the  
22 support;  
23                   a second plurality of printheads coupled to the second body  
24 including a third printhead and a fourth printhead;  
25                   a second fluid passage fluidly coupled to both the third  
26 printhead and the fourth printhead; and  
27                   a fourth fluid coupler fluidly coupled to the second fluid  
28 passage, wherein the fourth fluid coupler is configured to connect to the second  
29 fluid coupler.

1           20.   The kit of Claim 19, wherein the first fluid passage is primed with a  
2 first ink and wherein the second fluid passage is primed with a second ink  
3 distinct from the first ink.

1           21.   The kit of Claim 19, wherein the first fluid conduit is primed with a  
2 first ink and wherein the second fluid conduit is primed with a second ink  
3 distinct from the first ink.

1           22.   The kit of Claim 19, wherein the plurality of printheads are  
2 releasably coupled to the body.

1           23.   The kit of Claim 22, wherein the first fluid passage includes a  
2 plurality of fifth fluid couplers and wherein the plurality of printheads includes a  
3 plurality of sixth fluid couplers releasably coupled to the plurality of fifth fluid  
4 couplers.

1           24.    The kit of Claim 23, wherein at least one of the plurality of fifth  
2   fluid couplers and at least one of the plurality of sixth fluid couplers are keyed to  
3   one another.

1           25.    The kit of Claim 19, wherein the third fluid coupler and the fourth  
2   fluid coupler are keyed so as to connect to the first fluid coupler and the second  
3   fluid coupler, respectively, and such that the first fluid coupler cannot be  
4   connected to the fourth fluid coupler and such that the second fluid coupler  
5   cannot be connected to the third fluid coupler.

1           26.    The kit of Claim 19, wherein the first fluid coupler and the third  
2   fluid coupler each include indicia suggesting the connection of the first fluid  
3   coupler and the third fluid coupler and wherein the second fluid coupler and the  
4   fourth fluid coupler each include indicia distinct from the first indicia suggesting  
5   connection of the second fluid coupler and the fourth fluid coupler.

1           27.    The kit of Claim 26, wherein the first indicia includes at least one  
2   of the following: color, surface markings and external configurations.

1           28.    The kit of Claim 26, wherein the first ink reservoir contains a first  
2   ink, wherein the second ink reservoir contains a second ink distinct from the  
3   first ink, wherein the first indicia is selected based upon the first ink and wherein  
4   the second indicia is selected based upon the second ink.

1           29.    The kit of Claim 28, wherein the first ink has a first color, wherein  
2   the second ink has a second color, wherein the first indicia has substantially the  
3   first color and wherein the second indicia has substantially the second color.

1           30.    The kit of Claim 19, wherein the first printhead assembly includes a  
2   first interface coupled to the first body and coupled to the third fluid coupler,  
3   wherein the second printhead assembly includes a second interface coupled to  
4   the second body and coupled to the fourth fluid coupler, wherein the first fluid  
5   coupler and the second fluid coupler are supported by a third interface

6 configured to connect to either the first interface or the second interface and  
7 wherein the first interface, the second interface and the third interface are  
8 configured such that connection of the third interface and the first interface  
9 aligns the first fluid coupler with the third fluid coupler and such that connection  
10 of the third interface and the second interface aligns the second fluid coupler  
11 with the fourth fluid coupler.

1 31. The kit of Claim 30, wherein the first fluid conduit and the second  
2 fluid conduit are coupled to one another as a single unit.

1 32. The kit of Claim 31, wherein the first fluid conduit and the second  
2 fluid conduit are releasably coupled to the first ink reservoir and the second ink  
3 reservoir, respectively.

1 33. The kit of Claim 19, wherein the first printhead assembly includes:  
2 a first pen driver coupled to the first body and connected to each of  
3 the first plurality of printheads; and  
4 a first signal transmitting connector coupled to the body and  
5 connected to the first pen driver;  
6 wherein the second printhead assembly includes:  
7 a second pen driver coupled to the second body and  
8 connected to each of the second plurality of printheads; and  
9 a second signal transmitting connector coupled to the body  
10 and connected to the second pen driver; and  
11 wherein the printer further includes:  
12 a printhead controller;  
13 a signal transmitting line extending from the printhead  
14 controller; and  
15 a third signal transmitting connector coupled to the  
16 signal transmitting line, wherein the third signal transmitting connector is  
17 configured to be releasably connected to either the first signal transmitting  
18 connector or the second signal transmitting connector.

1           34. The kit of Claim 33 including a fourth signal transmitting connector  
2 connected to the signal transmitting line, wherein the fourth signal transmitting  
3 connector is configured to be releasably coupled to the printhead controller.

1           35. The kit of Claim 34, wherein the first fluid conduit and the second  
2 fluid conduit are configured to be releasably coupled to the first reservoir and  
3 the second reservoir, respectively, and wherein the first fluid conduit, the  
4 second fluid conduit and the signal transmitting line are coupled to one another  
5 as a single unit.

1           36. The kit of Claim 35, wherein the first printhead assembly includes a  
2 first interface supporting the third fluid coupler, wherein the second printhead  
3 assembly includes a second interface supporting the fourth fluid coupler and  
4 wherein the printer includes a third interface supporting the first fluid coupler,  
5 the second fluid coupler and the third signal transmitting connector, wherein the  
6 first interface, the second interface and the third interface are configured such  
7 that connection of the first interface and the third interface aligns the first fluid  
8 coupler with the third fluid coupler and further aligns the first signal transmitting  
9 connector with the third signal transmitting connector, and such that connection  
10 of the second interface and the third interface aligns the second fluid coupler  
11 with the fourth fluid coupler and further aligns the second signal transmitting  
12 connector with the third signal transmitting connector.

1           37. The kit of Claim 19 further including:  
2                   a third ink reservoir;  
3                   a third printhead assembly including:  
4                           a third body configured to be releasably coupled to the  
5 support;  
6                           a third plurality of printheads coupled to the third body;  
7                           a third fluid passage fluidly coupled to each of the plurality of  
8 printheads; and

9 a fifth fluid coupler fluidly coupled to the third fluid passage;  
10 and

11 a third fluid conduit fluidly coupled to the third ink reservoir and  
12 including a sixth fluid coupler configured to be releasably coupled to the fifth  
13 fluid coupler.

1 38. The kit of Claim 37, wherein the third fluid conduit is releasably  
2 coupled to the third ink reservoir.

1 39. The kit of Claim 19, wherein at least of the first fluid coupler, the  
2 second fluid coupler and the third coupler is configured to automatically block  
3 flow of fluid when in a disconnected state.

1 40. A printhead assembly for use in a printing system having an ink  
2 reservoir, a first fluid conduit fluidly coupled to the ink reservoir and including a  
3 first fluid coupler and a support adapted to be positioned proximate to a print  
4 medium, the printhead assembly comprising:

5 a body configured to be releasably coupled to the support;

6 a plurality of printheads coupled to the body including a first  
7 printhead and a second printhead;

8 a fluid passage fluidly coupled to both the first printhead and the  
9 second printhead; and

10 a second fluid coupler fluidly coupled to the fluid passage and  
11 configured to be releasably coupled to the first fluid coupler.

1 41. The printhead assembly of Claim 40, wherein the plurality of  
2 printheads are releasably coupled to the body.

1 42. The printhead assembly of Claim 41, wherein the first fluid passage  
2 includes a third fluid coupler and wherein each of the plurality of printheads  
3 includes a fourth fluid coupler releasably coupled to the third fluid coupler.

1 43. The printhead assembly of Claim 42, wherein the third fluid coupler  
2 and the fourth fluid coupler are keyed to one another.



1           44. The printhead assembly of Claim 40, wherein the second fluid  
2 coupler is configured to be keyed to the first fluid coupler.

1           45. The printhead assembly of Claim 40, wherein the first fluid coupler  
2 includes a first indicia and wherein the second fluid coupler includes a second  
3 indicia associated with the first indicia to suggest connection of the first fluid  
4 coupler with the second fluid coupler.

1           46. The printhead assembly of Claim 40, wherein the printing system  
2 includes a second ink reservoir, a second fluid conduit fluidly coupled to the  
3 second ink reservoir and a third fluid coupler fluidly coupled to the second fluid  
4 conduit, and a first interface coupled to the first fluid coupler and the third fluid  
5 coupler, wherein the printhead assembly includes a second interface coupled to  
6 the first fluid coupler, wherein the first interface and the second interface are  
7 configured such that connection of the first interface to the second interface  
8 aligns the first fluid coupler with the second fluid coupler.

1           47. The printhead assembly of Claim 40 including:  
2               a pen driver configured to control each of the plurality of  
3 printheads; and  
4               signal transmitting connector supported by the body and  
5 communicatively coupled to the driver, wherein the connector is configured to  
6 releasably and communicatively connect the driver to a printhead controller.

1           48. The printhead assembly of Claim 46 including a first interface  
2 coupled to the body and coupled to the second fluid coupler and the signal  
3 transmitting connector, wherein the first interface is configured to mate with a  
4 second interface coupled to the first fluid coupler and a second signal  
5 transmitting connector communicatively coupled to the printhead controller.

1           49. The printhead assembly of Claim 47, wherein the first interface and  
2 the second interface are configured such that the connection of the first  
3 interface and the second interface aligns the second fluid coupler with the first

4 fluid coupler and aligns the first signal transmitting connector with the second  
5 signal transmitting connector.

1 50. The printhead assembly of Claim 40, wherein the plurality of  
2 printheads are staggered relative to one another.

1 51. An umbilical for use in a printing system including a plurality of ink  
2 reservoirs, a support adapted to be positioned proximate a print medium, a  
3 printhead assembly having a plurality of printheads coupled to the support  
4 including a first printhead and a second printhead, a fluid passage coupled to  
5 both the first printhead and the second printhead, a first fluid coupler fluidly  
6 coupled to the fluid passage, a printhead driver coupled to the support and  
7 communicatively coupled to a first signal transmitting connector, and printhead  
8 controller having a second signal transmitting connector, the umbilical  
9 comprising:

10 a plurality of fluid conduits, each fluid conduit having a second fluid  
11 coupler at a first end and a third fluid coupler at a second end, wherein at least  
12 one of the second fluid couplers is configured to be connected to the first fluid  
13 coupler and wherein each of the third fluid couplers is configured to be  
14 releasably coupled to one of the plurality of ink reservoirs; and

15 a signal transmitting line having a third signal transmitting  
16 connector at a first end and a fourth signal transmitting connector at a second  
17 end, wherein the third signal transmitting connector is configured to be  
18 releasably connected to the first signal transmitting connector of the printhead  
19 assembly, wherein the fourth signal transmitting connector is configured to be  
20 releasably connected to the second signal transmitting connector of the  
21 printhead controller, and wherein the plurality of fluid conduits and the electrical  
22 transmission line are coupled to one another as a single unit.

1 52. The umbilical of Claim 51, wherein only one of the second fluid  
2 couplers is configured to be connected to the first fluid coupler.

1           53. The umbilical of Claim 51, wherein each second fluid coupler  
2 includes at least one indicia suggesting connection to a distinct fluid coupler  
3 associated with distinct printhead assemblies.

1           54. The umbilical of Claim 53, wherein the indicia include at least one  
2 of the following: distinct colors, distinct surface markings and distinct external  
3 configurations.

1           55. The umbilical of Claim 51, wherein the printhead assembly has a  
2 first interface supporting the first fluid coupler and wherein the umbilical has a  
3 second interface supporting each of the second fluid couplers, wherein the  
4 second interface is configured to align one of the second fluid couplers with the  
5 first fluid coupler when the second interface is connected to the first interface.

1           56. An umbilical for use in a printing system including a plurality of ink  
2 reservoirs, a support adapted to be positioned proximate a print medium, a  
3 printhead assembly having a plurality of printheads coupled to the support  
4 including a first printhead and a second printhead, and a fluid passage coupled  
5 to both the first printhead and the second printhead and a first fluid coupler  
6 coupled to the fluid passage, the umbilical comprising:

7                 a plurality of fluid conduits, each fluid conduit having a second fluid  
8 coupler at a first end and a third fluid coupler at a second end, wherein each  
9 second fluid coupler includes at least one indicia suggesting connection to a  
10 distinct fluid coupler associated with distinct printhead assemblies, wherein each  
11 of the third fluid couplers is configured to be releasably coupled to one of the  
12 plurality of ink reservoirs and wherein the plurality of fluid conduits are coupled  
13 to one another as a single unit.

1           57. The umbilical of Claim 56, wherein the indicia include at least one  
2 of the following: distinct colors, distinct surface markings and distinct external  
3 configurations.

1           58. The umbilical of Claim 56, wherein the printhead assembly has a  
2 first interface supporting the first fluid coupler and wherein the umbilical has a  
3 second interface supporting each of the second fluid couplers, wherein the  
4 second interface is configured to align one of the second fluid couplers with the  
5 first fluid coupler when the first second interface is connected to the first  
6 interface.

1           59. A method for printing different inks upon a print medium, the  
2 method comprising:  
3                 transmitting a first ink from a first ink reservoir through a first fluid  
4 conduit to a first plurality of printheads coupled to a body supported by a  
5 support proximate the medium;  
6                 disconnecting the first body from the support and from the first  
7 fluid conduit;  
8                 connecting a second body having a second plurality of printheads  
9 to the support and to a second fluid conduit; and  
10                transmitting a second ink from a second ink reservoir through the  
11 second fluid conduit to the second plurality of printheads.

1           60. A method for printing different inks upon a print medium, the  
2 method comprising:  
3                 connecting a plurality of fluid conduits to a plurality of ink  
4 reservoirs;  
5                 connecting a first printhead assembly having a first plurality of  
6 printheads to a support proximate the print medium and to a first portion of the  
7 plurality of fluid conduits, leaving a second portion of the plurality of fluid  
8 conduits not connected to any printhead assembly;  
9                 disconnecting the first printhead assembly from the support and  
10 from the first portion of the plurality of fluid conduits; and  
11                connecting a second printhead assembly having a second plurality  
12 of printheads to the support proximate the print medium and to the second

13 portion of the plurality of fluid conduits, leaving the first portion of the plurality  
14 of fluid conduits not connected to any printhead assembly.

1           61. The method of Claim 60, wherein the step of connecting the first  
2 printhead assembly to the first portion of the plurality of fluid conduits includes:  
3           mating a first interface coupled to a fluid coupler fluidly coupled to  
4 the first plurality of printheads to a second interface coupled to each of the  
5 plurality of fluid conduits, wherein mating of the first interface and the second  
6 interface aligns the fluid coupler with the first portion of the plurality of fluid  
7 conduits.

1           62. The method of Claim 60, wherein the step of connecting the first  
2 printhead assembly to the first portion of the plurality of fluid conduits includes:  
3           identifying a first indicia associated with the first portion of the first  
4 plurality of fluid conduits that corresponds to a second indicia associated with  
5 the first printhead assembly.

1           63. A printing system comprising:  
2           a first ink reservoir;  
3           a second ink reservoir;  
4           a support;  
5           a first fluid conduit fluidly coupled to the first ink reservoir and  
6 terminating at a first fluid coupler;  
7           a second fluid conduit fluidly coupled to the second ink reservoir  
8 and terminating at a second fluid coupler;  
9           a printhead assembly including:  
10           a body configured to be releasably coupled to the support;  
11           a plurality of printheads coupled to the body; and  
12           a fluid passage fluidly coupled to at least one of the plurality  
13 of printheads, the fluid passage including a third fluid coupler releasably coupled  
14 to the first fluid coupler while the second fluid coupler is not coupled to any  
15 printhead assembly, wherein the first fluid coupler, the second fluid coupler and

16 the third fluid coupler are configured to form a seal when in a disconnected  
17 state.

1 64. A printhead assembly for use in a printing system having an ink  
2 reservoir, a first fluid conduit fluidly coupled to the ink reservoir and including a  
3 first fluid coupler, and a support, the printhead assembly comprising:

4 a body;  
5 means for releasably coupling the body to the support without the  
6 use of tools;

7 a plurality of printheads coupled to the body; and  
8 means for releasably coupling the plurality of printheads to the fluid  
9 conduit.

1 65. A printer kit comprising:

2 a printer including:

3 a first ink reservoir;  
4 a second ink reservoir;  
5 a support adapted to extend proximate to a print medium;  
6 a first fluid conduit fluidly coupled to the first ink reservoir

7 and including a first fluid coupler;

8 a second fluid conduit fluidly coupled to the second ink  
9 reservoir and including a second fluid coupler;

10 a first printhead assembly including:

11 a first body configured to be releasably coupled to the  
12 support;

13 a first plurality of printheads coupled to the first body;

14 and

15 a third fluid coupler fluidly coupled to the first plurality  
16 of printheads;

17 a second printhead assembly including:

18 a second body configured to be releasably coupled to  
19 the support;

20 a second plurality of printheads coupled to the second  
21 body; and  
22 a fourth fluid coupler fluidly coupled to the second  
23 plurality of printheads; and  
24 means for designating the third fluid coupler for exclusive  
25 connection to the first fluid coupler and for designating the fourth fluid coupler  
26 for exclusive connection to the second fluid coupler.